A Study on the Factors Affecting ADL and IADL in the Elderly Population

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Abstract:

Background: Assessment of the activities of daily living or ADLs, the basic tasks of everyday life and instrumental activities (IADLs) needed to live independently in the community encompasses the social, psychological and biological factors affecting the physical and psychological well-being of the elderly. Although a number of studies have delved into ADLs and IADLs in the elderly, such studies among the local population are sparse. Hence, this study was conducted on the factors affecting ADL and IADL in the elderly population residing in the rural field practice area in southern India. **Methods:** This was a community-based descriptive cross-sectional study conducted among 310 elderly people aged ≥ 60 years residing in the rural field practice area (Ittamadu, Primary Health Centre) of Raja Rajeswari Medical College and Hospital, Bangalore. The objectives of the study were to study the factors affecting ADL and IADL in the elderly population. The research participants were asked to rate their degree of independence in doing six distinct ADL tasks, which included the physical domains of mobility, continence, eating, and bathing. Eight domains were taken into consideration while measuring IADL: making phone calls, going shopping, preparing meals, cleaning, doing laundry, travelling, taking care of one's own medicine, and managing finances. All the data collected were compiled, entered into a Microsoft Excel worksheet and analyzed using SPSS [Statistical Package for Social Sciences] software v.21.0. Descriptive statistics and the chi-square test were used as required. **Results:** Out of 310 elderly people, the majority (267, or 86.13%) were independent in their physical ADL, while the remaining 43 (13.87%) were dependent on one or more activities. Difficulty in all the activities of daily living was higher among females compared to males.36 (11.61%) were totally dependent on others for all the IADL and 73 (23.54%) were totally independent. In all the IADL, except preparation of meals and managing laundry, the elderly who were above 80 years old were requiring more assistance compared to the elderly who were 70-79 years old or 60-69 years old. Difficulty in performing activities of daily living was greater in illiterate 30(21.43%) compared to literate 13(7.65%).The ability to perform IADL was better among 60-69 years compared to 70-79 and above 80 years. The ability to perform all, 1-3 and 4-7 IADLs was better among those who were living with their spouse and children or grandchildren compared to those who were living alone, with their spouse only and others. **Conclusion:** The study of the incidence and factors affecting ADL and IADL in the elderly population aids in a better understanding of the needs of the ageing population, which would help in formulating better care plans and policies that aim at mitigating adversities in this vulnerable group.

Keywords: Activities of Daily Living (ADLs), Instrumental Activities of Daily Living (IADLs)

Introduction:

A rapid rise in the elderly population poses several challenges. The ageing process is characterized by a complex set of social, psychological, and biological changes in an individual. The condition of the elderly in a social setting is not merely determined by their inevitable characteristics but also depends upon the cultural practices in the

society which happen to be changing at a rapid pace.

The "activities of daily living," or ADLs, are the fundamental duties of daily living, including clothing, eating, bathing, using the restroom, moving (i.e., getting in and out of a chair or bed), and maintaining continence (managing bowel and bladder movements). People who are unable to do these tasks require support from mechanical equipment, from other people, or from both. In addition to offering unbiased evaluations of the elderly's capacity and degree of difficulty doing everyday chores, ADLs have been discovered to be a significant predictor of living situations, health costs, mortality, and the provision of care at home or in an institution. When measured through household surveys, functional disabilities in terms of ADLs also help to understand socioeconomic and demographic disparities in such functional limitations; the degree of familial support provided to individuals who are unable to perform ADLs gives insight into how such informal arrangements can be expected to address care needs. Instrumental activities (IADL) on the other hand, are not essential for fundamental functioning, but they allow an individual to live independently in the community. They are more complex and require a higher level of personal autonomy and enough capacity to make decisions, as well as greater interaction with the environment, such as handling money, using telephones, shopping, modes of transportation, etc.

Although a number of studies have delved into ADLs and IADLs in the elderly, such studies among the local population are sparse. Hence, this study was conducted on the factors affecting ADL and IADL in the elderly population residing in the rural field practice area in southern India.

Materials &methods:

This was a community-based descriptive cross-sectional study conducted among 310 elderly people aged ≥ 60 years residing in the rural field practice area (Ittamadu, Primary Health Centre) of Raja Rajeswari Medical College and Hospital, Bangalore. The objectives of the study were to study the factors affecting ADL and IADL in the elderly population.The research participants were asked to rate their degree of independence in doing six distinct ADL tasks, which included the physical domains of mobility, continence, eating, and bathing. Eight domains were taken into consideration while measuring IADL: making phone calls, going shopping, preparing meals, cleaning, doing laundry, travelling, taking care of one's own medicine, and managing finances.

All the data collected were compiled, entered into a Microsoft Excel worksheet and analyzed using SPSS [Statistical Package for Social Sciences] software version 21.0. Descriptive statistics and the chi-square test were used as required.

Results:

Out of 310 elderly people, the majority 267 (86.13%) were independent in their physical ADL, while the remaining 43 (13.87%) were dependent on one or more activities. Nineteen (6.13%) elderly had difficulty in bathing, and 13 (4.19%) elderly had difficulty in dressing, toileting, or mobility. 7 (2.26%) had difficulty in feeding. Difficulty in all the activities of daily living was higher among females compared to males. The results are as shown in Table 1.

Type of ADL	Male(n=134)	%	Female(n=176)	%	Total(n=310)	%
Bathing	8	5.97	11	6.25	19	6.13
Dressing	4	2.99	9	5.11	13	4.19
Toilet	5	3.73	8	4.55	13	4.19
Mobility	3	2.24	10	5.68	13	4.19

Continence	3	2.24	5	2.84	8	2.58
Feeding	2	1.49	5	2.84	7	2.26

Table 1: Distribution of Elderly According to Assistance Required in ADL

*This table consists of multiple responses

Out of 310 elderly people, 36 (11.61%) were totally dependent on others for all the IADL and 73 (23.54%) were totally independent. 237 (76.45%) were dependent on one or more activities. The majority 215 (69.35%) of the elderly had difficulty in preparing meals. 184 (59.35%) elderly people had difficulty in going for shopping. 71 (22.90%) elderly people had difficulty in housekeeping. More females had difficulty in using phones, going shopping, travelling independently, dispensing their own medication and handling finances independently compared to males, whereas a greater number of males had difficulty in the preparation of meals, housekeeping and laundry compared to females. (Table 2)

Type of IADL	**Male (n=134)**	**%**	**Female (n=176)**	**%**	**Total (n=310)**	**%**
Use of Phone	30	22.39	49	27.84	79	25.48
Shopping	76	56.72	108	61.36	184	59.35
Preparation of Meals	102	76.12	113	64.20	215	69.35
Housekeeping	31	23.13	40	22.73	71	22.90
Laundry	68	50.75	69	39.20	137	44.19
Travel Independently	33	24.63	60	34.09	93	30.00
Dispense Own Medication	52	38.81	81	46.02	133	42.90
Handle Finances	35	26.12	74	42.05	109	35.16

Table 2: Distribution of Elderly According to Assistance Required in IADL

*This table consists of multiple responses

As shown in Table 3, in all the IADL, except preparation of meals and managing laundry, the elderly who were above 80 years old were requiring more assistance compared to the elderly who were 70-79 years old or 60-69 years old.

Type of IADL	**60-69 (n=202)**	**%**	**70-79 (n=80)**	**%**	**>80 (n=28)**	**%**	**Total (n=310)**	**%**
Use of Phone	41	20.30	26	32.50	12	**42.86**	79	25.48

Shopping	102	50.50	59	73.75	23	**82.14**	184	59.35
Preparation O=of Meals	131	64.85	65	**81.25**	19	67.86	215	69.35
Housekeeping	24	11.88	33	41.25	14	**50.00**	71	22.90
Laundry	71	35.15	49	**61.25**	17	60.71	137	44.19
Travel Independently	38	18.81	31	38.75	24	**85.71**	93	30.00
Dispense Own Medication	72	35.64	41	51.25	20	**71.43**	133	42.90
Handle Finances	50	24.75	35	43.75	24	**85.71**	109	35.16

Table 3: Distribution of Elderly According to Assistance Required in IADL with Age

*This table consists of multiple responses

Difficulty in performing activities of daily living was higher in the age group of 80 years 13 (46.43%) compared to those in 70-79 years 15(18.75%) and 60-69 years 15 (7.43%) and this was found to be statistically significant. Difficulty in performing activities of daily living was greater in females 27(15.34%) compared to males 16 (11.94%). This was found to be statistically not significant.

Difficulty in performing activities of daily living was greater in illiterates 30(21.43%) compared to literates 13(7.65%) and this was found to be statistically significant. Difficulty in performing activities of daily living was greater in those who were not working 35(15.77%) compared to those who were working 8(9.09). This was found to be statistically not significant.

Difficulty in performing activities of daily living was higher in those who belonged to lower socio economic classes compared to classes 1,2 and 3. This was found to be statistically not significant. (Table 4)

Socio Demographic Characteristics	**Require Assistance in ADL**		**Do Not Require Assistance in ADL**		**Chi Square**	**Df**	**P-Value**
Age							
60-69 (n=202)	15	7.43	187	92.57	33.461	2	< 0.00001
70-79 (n=80)	15	18.75	65	81.25			
Above 80 (n=28)	13	46.43	15	53.57			
Total	43	**13.87**	267	**86.13**			
Sex							
Male (n=134)	16	11.94	118	88.06	0.736	1	0.390
Female (n=176)	27	15.34	149	84.66			
Total	43	13.87	267	86.13			

Literary Status							
Literate(n=170)	13	7.65	157	92.35	12.205	1	0.0004
Illiterate (n=140)	30	21.43	110	78.57			
Total	43	13.87	267	86.13			
Occupational Status							
Presently working (n=88)	8	9.09	80	90.91	2.350	1	0.125
Presently not working (n=222)	35	15.77	187	84.23			
Total	43	13.87	267	86.13			
Socio Economic Status							
Class 1 & 2 (n=25)	3	12.00	22	88.00	0.274	3	0.964
Class 3 (n=64)	8	12.50	56	87.50			
Class 4 (n=142)	21	14.79	121	85.21			
Class 5 (n=79)	11	13.92	68	86.08			
Total	43	13.87	267	86.13			

Table 4: Distribution of Elderly According to Assistance Required in Performing ADL with Their Socio-Demographic Characteristics

As depicted in Table 5,difficulty in performing activities of daily living was greater among those who were living with their spouse and children or grandchildren compared to those who were living alone and with others. This difference was found to be statistically not significant. (P = 0.727)

Socio Demographic Characteristics	**Require Assistance in ADL**		**Do Not Require Assistance in ADL**		**Chi Square**	**Df**	**P-Value**
Current Living Arrangement							
Alone and Others (n=39)	4	10.26	35	89.74	0.6369	2	0.727
with spouse only (n=62)	8	12.90	54	87.10			
With spouse and children (n=209)	31	14.83	178	85.17			
Total	**43**	**13.87**	**267**	**86.13**			

Table 5: Distribution of Elderly According to Assistance Required in Performing ADL with Their Living Arrangements

The ability to perform IADL was better among 60-69 years old compared to 70-79 and above 80 years old. This was found to be statistically significant (p = 0.000504). The ability to perform IADL was better among females compared to males and was found to be statistically significant (p = 0.008395). The ability to perform IADL was better among those who were literate compared to those who were illiterate. However,this was found to be statistically not significant (p = 0.154393).

The ability to perform IADL was better among those who were presently working compared to those who were not working and the difference was found to be statistically significant (p =0.000032).There was a statistically significant difference (p< 0.00001) in the abilityto perform IADL among higher socio-economic classes compared to lower socio-economic classes. (Table 6)

Socio Demographic Characteristics	Can Perform None		Can Perform All		Can Perform 1-3		Can Perform 4-7		Chi Square	Df	P-Value
	No.	%	No.	%	No.	%	No.	%			
Age											
60-69 (n=202)	11	5.45	28	13.86	32	15.84	131	64.85			
70-79 & Above 80 (n = 108)	10	9.26	8	7.41	37	34.26	53	49.07	**17.7115**	**3**	**0.000504**
Total	**21**	**6.77**	**36**	**11.61**	**69**	**22.26**	**184**	**59.35**			
Sex											
Male (n=134)	7	5.22	10	7.46	23	17.16	94	70.15			
Female (n=176)	14	7.95	26	14.77	46	26.14	90	51.14	**11.7229**	**3**	**0.008395**
Total	**21**	**6.77**	**36**	**11.61**	**69**	**22.26**	**184**	**59.35**			
Literacy Status											
Literate(n=170)	7	4.12	23	13.53	37	21.76	103	60.59			
Illiterate (n=140)	14	10	13	9.29	32	22.86	81	57.86	**5.2498**	**3**	**0.154393**
Total	**21**	**6.77**	**36**	**11.61**	**69**	**22.26**	**184**	**59.35**			
Working Status											
Presently working (n=88)	3	3.41	20	22.73	9	10.23	56	63.64			
Presently not working (n=222)	18	8.11	16	7.21	60	27.03	128	57.66	**23.4958**	**3**	**0.000032**
Total	**21**	**6.77**	**36**	**11.61**	**69**	**22.26**	**184**	**59.35**			
Socio-Economic Status											

Class 1, 2 & 3	3	3.37	28	31.46	5	5.62	53	59.55	**63.244**	**6**	**< 0.00001**
Class 4 (n=142)	12	8.45	7	4.93	36	25.35	87	61.27			
Class 5 (n=79)	6	7.59	1	1.27	28	35.44	44	55.7			
Total	**21**	**6.77**	**36**	**11.61**	**69**	**22.26**	**184**	**59.35**			

Table 6: Distribution of Elderly According to Ability to Perform IADL with Their Socio-Demographic Characteristics

As shown in Table7, the ability to perform all 1-3 and 4-7 IADLs was better among those who were living with their spouse and children or grandchildren compared to those who were living alone, with their spouse only, and others. While 14.81% of those living alone were unable to perform any of the IADLs, among those living with their spouse and children or grandchildren only 4.31% could.

Socio Demographic Characteristics	**Can Perform None**		**Can Perform All**		**Can Perform 1-3**		**Can Perform 4-7**		**Total**	
Living Arrangements										
Alone (n=27)	4	**14.81**	1	**3.70**	7	**25.93**	15	**55.56**	**27**	**100.00**
with spouse only (n=62)	6	9.68	7	11.29	13	20.97	36	58.06	**62**	**100.00**
With spouse and children /children and grandchildren (n=209)	9	**4.31**	27	**12.92**	44	**21.05**	129	**61.72**	**209**	**100.00**
Others (n=12)	2	16.67	1	8.33	5	41.67	4	33.33	**12**	**100.00**
Total	**21**	**6.77**	**36**	**11.61**	**69**	**22.26**	**184**	**59.35**	**310**	**100.00**

Table 7: Distribution of Elderly According to Ability to Perform IADL with Their Living Arrangements

Discussion:

India has had a notable rise in life expectancy and a notable rise in the percentage of elderly persons in the past several decades.[1]Unfortunately, a significant percentage of elderly individuals are more susceptible to age-related decline in their quality of life.The elderly have a lower quality of life as a result of these problems.[2] Therefore, developing the policy perspective requires knowledge of the factors that influence ADL and IADL. Therefore, the purpose of this study is to ascertain the variables linked to IADL and ADL among the elderly and to investigate the frequency of IADL and ADL among the elderly in India.

In the present study, the prevalence of elderly people requiring assistance in one or more activities was 13.87%. Which was higher than the prevalence observed in the study conducted by Deepak Sharma et al.[3] and ISEC, Bangalore.[4]

The prevalence of the elderly requiring assistance in one or the other was lower in this study compared to the study conducted in Malaysia by SharifaPuteh et al.[5] In the present study, most of the elderly, i.e., 6.13% had difficulty in bathing. This observation was in accordance with the studies conducted by Deepak Sharma et al.,[3] ISEC, Bangalore[1] and Ayan Ghosh et al.[6] whereas it differs from a study conducted by NagapraveenVeerapu et al.[7] where the highest

percentage of dependence was in relation to urinary continence/evacuation, followed by getting a bath.

In the present study, the prevalence of functional dependence for IADL was 76.45%. This observation was higher than a study conducted by NagapraveenVeerapu et al. where the prevalence was 51.8% and this observation was less than a study conducted by Mohan Chandra Dolai et al.[8] where the prevalence was 83.93%. In the present study, the majority of the elderly, i.e., 69.35% had difficulty in the preparation of meals. This observation was in accordance with the study conducted by ISEC Bangalore,whereas it differs from the studies conducted by NagapraveenVeerapu et al. and Mohan Chandra Dolai et al., where the majority of the elderly had difficulty handling finances. More females had difficulty using phones, going shopping, travelling independently, dispensing their own medication and handling finances independently compared to males whereas a greater number of males had difficulty in the preparation of meals, housekeeping and laundry compared to females. The same findings were seen in the study conducted by ISEC Bangalore[1]and Dr. Shubha Dube et al.[9]

In the research by Shekhar Chauhan et al., more than two thirds (78%) of elderly people did not report having ADL impairment [10]. The elderly with moderate ADL difficulty made up around one-fifth (19%) of the population, while the remaining 3% had severe ADL disability. IADL was reported by a greater percentage of older persons in India than ADL, according to a prior study conducted in that country.[11]

The same study's authors found that compared to their male counterparts, a greater proportion of elderly women exhibited severe ADL disability (3.5% vs. 2.8%) and severe IADL disability (7.5% vs. 4.2%). In a similar vein, compared to senior people aged 60–69, a greater proportion of those aged 70+ had severe ADL impairment (5.7 vs. 1.4%) and IADL disability (11.1% vs. 2.3%). ADL difficulty was severe in around 6.5% of the elderly who were never married. When compared to older individuals with higher education levels, a greater proportion of illiterate individuals exhibited severe ADL disability (2.9% vs. 1.9%) and severe IADL disability (4.6% vs. 1.6%). Moreover, compared to their counterparts, senior people living in rural areas, the poorest elderly people, those without health insurance, those with low self-rated health, and those who did not engage in any physical exercise were more likely to have significant ADL and IADL deficits.

According to a research, males were more likely to say they needed assistance taking their medications, doing laundry, and preparing meals. This is a significant factor in the reason that older males experience IADL impairments at a higher rate than older women.[12]

The majority of senior citizens (52%) did not report having any IADL disabilities. In the study by Shekhar Chauhan et al., around two-fifths (42%) of the elderly had intermediate IADL impairment, while the remaining 6% had severe IADL disability. The study discovered that as older people age, their chance of developing severe ADL and IADL increases. Nearly all of the studies conducted on this subject support this conclusion.

Female elderly were more likely to have the risk of ADL and IADL limitation than male elderly. Previous studies are in line with the findings of this study.[13-16]Studies worldwide have also shown that the female gender is one of the risk factors for disability in old age.[17,18]

The study found that older people with greater levels of education had a reduced risk of impairment compared to older people with lower levels of education. It is also generally known that functional impairment and older adults' educational attainment are related. Increased resource availability associated with higher education, according to Hu et al. (2005), may improve self-perception and lessen limits for a variety of health conditions.[19]

Seniors living in cities had a reduced likelihood of having a severe IADL handicap compared to seniors living in rural areas. This study's findings that older people in rural areas are more likely than those in urban areas to experience IADL impairment are supported by earlier research. Twenty One possible explanation for the decreased incidence of IADL impairment among older adults living in metropolitan settings might be the improved healthcare infrastructure that these places offer. The elderly in rural locations have significant IADL because they are less likely to travel to handle their money, payments, and purchases and

are more dependent on family members or other persons.[20] Twenty Research has shown that older people living in cities have greater access to health care, logistical help for transportation, and retirement benefits that provide them with enough money to prevent functional problems.[21]

In the present study,the ability to perform all 1-3 and 4-7 IADLs was better among those who were living with their spouse and children or grandchildren compared to those who were living alone, with their spouse only and others. Shekhar Chauhan et al., on the other hand, found that older people who lived with spouses were more likely to experience significant ADL handicaps. According to the authors' hypothesis, older people who live alone support themselves by doing tasks necessary for daily life and, as a result, are less likely than those who live with a spouse to report a significant ADL handicap.

Conclusion:

The study of the incidence and factors affecting ADL and IADL in the elderly population aids in a better understanding of the needs of the ageing population, which would help in formulating better care plans and policies that aim at mitigating adversities in this vulnerable group.

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